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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,030	01/13/2004	Jun Xie	020859-002610US	3257

22428 7590 07/27/2005

FOLEY AND LARDNER  
SUITE 500  
3000 K STREET NW  
WASHINGTON, DC 20007

EXAMINER
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BASTIANELLI, JOHN

ART UNIT	PAPER NUMBER
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3751

DATE MAILED: 07/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/757,030

Applicant(s)

XIE ET AL.

Examiner

John Bastianelli

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 16-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/18/04, 5/24/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Group I, claims 1-15 in the reply filed on May 2, 2005 is acknowledged. In response to applicant's argument that the claims can be searched without undue burden on the examiner, the examiner would have to search a completely different area which would take a lot of time and effort. The applicant has the right to pursue a divisional application to the non-elected claims.

### ***Drawings***

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 222, 224 ,230. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to because the examiner can barely understand the drawings. Figs. 2a and 2b need to be hatched properly. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application.

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Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Specification*

4. The disclosure is objected to because of the following informalities: Reference designations 222, 224 and 240 are not in the drawings. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Cabuz et al. US 6,837,476.

Cabuz discloses a valve having a substrate 5; a first fluid channel 42 disposed on the substrate; a second fluid channel 12 disposed on the substrate; a polymer based diaphragm 20 coupled between the first fluid channel and the second fluid channel; an orifice 25a, 25b disposed within a portion of the polymer diaphragm, the orifice being adapted to provide fluid communication between the first fluid channel and the second fluid channel; a first electrode 30 or 54 coupled to the substrate; a second electrode (col. 5, lines 45-57) coupled to the polymer based diaphragm and separated from the first electrode by the first fluid channel; and a power source coupled between the first electrode and the second electrode, the power source being adapted to actuate the diaphragm to block fluid communication between the first fluid channel and the second fluid channel through the orifice. The fluid channels contain fluid which is by definition liquid or gas. Cabuz states that the valve may be any size therefore the channel height and diaphragm diameter and thickness are seen as encompassed. The first fluid channel height is different than the second fluid channel. The second electrode is embedded within the diaphragm. The substrate is silicon.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 13-15, and alternatively 4-5 and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cabuz et al. US 6,837,476 in view of Biegelsen et al. US 5,971,355.

Cabuz lacks a mention of what the diaphragm and electrodes are made out of. Cabuz lacks a flow sensor. Biegelsen discloses parylene and electrodes out of aluminum. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the diaphragm of Cabuz out of parylene as disclosed by Biegelsen in order to insulate the valve. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the electrodes of Cabuz out of aluminum as disclosed by Biegelsen in order to provide a lightweight, inexpensive electrode. Biegelsen discloses a flow sensor. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a flow sensor as disclosed by Biegelsen in a channel of Cabuz to provide safeguards for the valve. Biegelsen discloses the valve size in microns. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the valve of Cabuz in microns as disclosed by Biegelsen as it is an obvious matter of design choice to make a device as small or large as needed.

9. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Biegelsen et al. US 5,971,355 in view of Cabuz et al. US 6,837,476.

Biegelsen discloses a valve having a substrate 200; a first fluid channel 203 disposed on the substrate; a second fluid channel 226 disposed on the substrate; a membrane 210 coupled between the first fluid channel and the second fluid channel; a passageway being adapted to provide fluid communication between the first fluid channel and the second fluid channel; a first

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electrode coupled to the substrate; a second electrode 216 coupled to the membrane and separated from the first electrode by the first fluid channel; and a power source coupled between the first electrode and the second electrode, the power source being adapted to actuate the diaphragm to block fluid communication between the first fluid channel and the second fluid channel through the orifice. Biegelsen lacks a polymer based diaphragm with an orifice. Cabuz discloses a polymer based diaphragm with an orifice embedded with an electrode. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the membrane of Biegelsen as a polymer based diaphragm with an orifice embedded with an electrode in order to provide better sealing of the valve to the valve seat. The fluid channels contain fluid which is by definition liquid or gas. Cabuz states that the valve is a microdevice therefore the channel height and diaphragm diameter and thickness are seen as in microns thus encompassing the claimed sizes. The substrate is silicon. Biegelsen discloses using parylene. The electrode is aluminum.

### *Conclusion*

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Johnson, Biegelsen, and Ohnstein discloses dimensions in microns. Cabuz, Herb, Quenzer, Barth, Graveson, Johnson, Albarda, and Mikkor disclose diaphragm valves with electrodes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Bastianelli whose telephone number is (571) 272-4921. The examiner can normally be reached on M-F (9:00-6:30).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine Yu can be reached on (571) 272-4835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John Bastianelli  
Primary Examiner  
Art Unit 3751



JB  
July 22, 2005